MULTIMEDIA UNIVERSITY

STUDENT ID NO

MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 2, 2016/2017

BEC 2054 – ECONOMETRICS II

11 MARCH 2017

2.30 p.m – 4.30 p.m

(2 Hours)

INSTRUCTIONS TO STUDENTS

1. This question paper consists of 3 pages with 4 questions only.

2. Attempt **ALL FOUR** questions. The distribution of the marks for each question is given.

3. Please write all your answer in the Answer Booklet provided.

Question One (40 marks)

(a) Write a **short note** to explain the following econometrics concepts:

(i) Endogenous Variable
(ii) Stochastic Regressors
(iii) Causality
(iv) Instrumental Variable Technique
(v) Nonstationary Variables

(30 marks)

(b) Match the answer for Column A with the one provided in Column B. [see example (z)]

Column A	Answer
Augmented Dickey-Fuller test	
Durbin *h*-test	
Second order autoregressive scheme	
Autoregressive conditional heteroscedasticity model	
Two-stage least square	
(z) BLUE	***3***

Column B
(1) Test of stationarity
(2) $u_t = p_1 u_{t-1} + p_2 u_{t-2} + \upsilon_t$
(3) Best Linear Unbiased Estimator
(4) Simultaneous equation model
(5) Volatility measurement
(6) Large sample test of first order serial correlation in autoregressive models

(10 marks)

Continued...

Question Two (20 marks)

Koko estimated the following two money supply equations using annual data for Malaysia. The first equation was estimated using ordinary least square and the second was estimated using two-stage least square (with investment and government expenditure as predetermined variables in the reduced form equation). Both equations are stated below:

Ordinary Least Square: $\hat{M}_t^s = 10 + \underset{(0.01)}{0.60} GDP_t$ Adjusted R-squared = 0.80; SIC = 1.20

Two-stage Least Square: $\hat{M}_t^s = 15 + \underset{(0.02)}{0.70} \hat{G}DP_t$ Adjusted R-squared = 0.90; SIC = 0.90

where M^S = the money stock (in billion ringgit Malaysia)
GDP = gross domestic product (in billion ringgit Malaysia)
p-value in the parentheses

(a) What does the $\hat{G}DP$ in the two-stage least square equation mean? (5 marks)

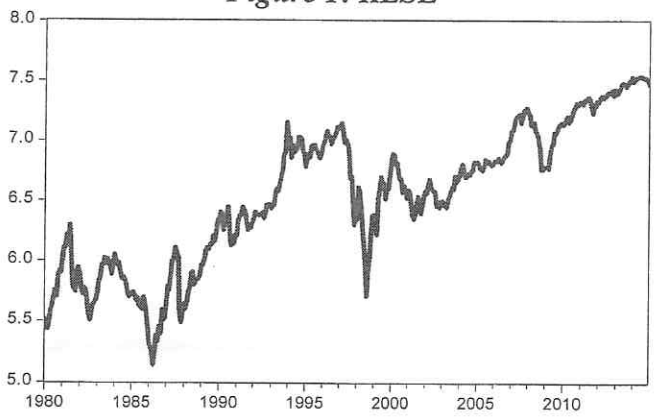
(b) Which equation is more likely to have biased coefficients? Explain. (5 marks)

(c) Which equation would you prefer, and why? (10 marks)

Question Three (20 marks)

Figure 1 shows a plot of Kuala Lumpur Stock Exchange (KLSE) index in natural logarithm over January, 1980 to December, 2014.

Figure 1: KLSE



(a) Based on Figure 1, is the series stationary? Why? (5 marks)

Continued...

(b) The results of unit-root tests are shown below. From the result shown in Exhibit 1, find out if the series contains unit-root? What do you conclude about the order of integration of the series. (10 marks)

Exhibit 1: Unit-root tests

		Augmented Dickey-Fuller			Phillips Perron		
KLSE	Constant	-1.3702	(0.5975)	[7]	-1.6509	(0.4556)	[3]
	Constant & trend	-3.2329	(0.0795)	[7]	-2.7775	(0.2065)	[0]
ΔKLSE	Constant	-7.5463	(0.0000)	[6]	-17.7586	(0.0000)	[6]
	Constant & trend	-7.5370	(0.0000)	[6]	-17.7373	(0.0000)	[6]

Notes: Δ denotes changes operator. Values in ( ) and [ ] refer to p-value and lag-length selected based on AIC, respectively.
Bandwidth selected using Bartlett kernel (Newey-West automatic).

(c) If a unit-root exists, how would you characterize such time series? (5 marks)

Question Four (20 marks)

(a) Mr. Law analyses at a time series data and wish to know whether it follows a purely autoregressive process or a purely moving average process. Describe the **four** steps of Box-Jenkins methodology that will help his analysis. (12 marks)

(b) Puan Napsiah performed ARCH test for the presence of second-order ARCH and check that she obtained the following result (Exhibit 2):

Exhibit 2: Heteroskedasticity Test—ARCH

F-statistic	6.142966	Prob. F(2,413)	0.0023
Obs*R-squared	12.01767	Prob. Chi-Square(2)	0.0025

Is there evidence of ARCH effect? Interpret the results. (8 marks)

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